

IN THE CLAIMS:

Please amend the Claims as follows:

1. **(Currently Amended)** A film-forming apparatus comprising:

a gas-mixing chamber for admixing a raw gas and a reactive gas;

a film-forming chamber connected to the gas-mixing chamber;

a circular shower head disposed on a top face of the film-forming chamber;

a stage for placing thereon a substrate to be processed, the stage being disposed inside the film-forming chamber ~~in a manner~~ and moveable in an up and down manner;

an exhaust port for discharging an exhaust gas from inside the film-forming chamber, the discharge exhaust port ~~being disposed on~~ being defined only by a lowermost surface of a side wall of the film-forming chamber and a lowermost surface of the film-forming chamber and located below a level of the stage at a time of film formation, the discharge exhaust port being so constructed and arranged that the exhaust gas generated in a space defined by the shower head and the top face of the stage is discharged from the discharge exhaust port through a clearance between the side wall of the film-forming chamber and the stage; and

a gas mixture prepared in the gas-mixing chamber being introduced into the film-forming chamber via the shower head, thereby forming a film on the substrate to be processed,

wherein a supply port which supplies the gas mixture ~~communicated from the gas-mixing chamber to the shower head to thereby supply the gas mixture~~ is defined

only by an outer peripheral surface of the gas-mixing chamber and an inner surface of the film-forming apparatus, wherein the supply port is disposed above the shower head and on a diametrical extension line of the shower head, the supply port being so is arranged and constructed such that the gas mixture supplied from the gas-mixing chamber flows between the gas-mixing chamber and the inner surface of the film-forming apparatus and through from a peripheral exterior on the top face of the shower head toward a central portion along the top face thereof.

Claim 2 **(Canceled).**

3. **(Previously Presented)** The film-forming apparatus as set forth in claim 1, wherein when the flow rate of the gas mixture is large, the shower conductance is small and the gas mixture is injected into the film-forming chamber from the central portion of the shower head (hereunder referred to as "central gas injection") upon the formation of a film, the apparatus is so designed that it comprises a shower head having a large diameter, that the distance between the shower head and the substrate to be processed is increased or that a shower head having a large diameter is used and the distance between the shower head and the substrate to be processed is increased, to thus prevent the central gas injection of the gas mixture and to make the manner of a gas injection of the gas mixture uniform.

4. **(Previously Presented)** The film-forming apparatus as set forth in claim 1, wherein when the flow rate of the gas mixture is small, the shower conductance is large and the gas mixture is injected into the film-forming chamber from a shower head and into a region above a substrate to be processed from the periphery of the shower

head (hereunder referred to as "peripheral gas injection") upon the formation of a film, the apparatus is so designed that it comprises a shower head having a small diameter, that the distance between the shower head and the substrate to be processed is reduced or that a shower head having a small diameter is used and the distance between the shower head and the substrate to be processed is reduced, to thus prevent the peripheral gas injection of the gas mixture and to make the manner of the gas injection of the gas mixture uniform.

5. **(Previously Presented)** The film-forming apparatus as set forth in claim 1, wherein the inner diameter of the film-forming chamber and the diameter of the shower head satisfy the following relation:

$(\text{diameter of the shower head}) \times 1.5 < (\text{inner diameter of the film-forming chamber}) < (\text{diameter of the shower head}) \times 2.5.$

6. **(Previously Presented)** The film-forming apparatus as set forth in claim 5, wherein the pressure in the film-forming chamber, the diameter of the shower head and the overall flow rate of gases upon the formation of the film satisfy the following relations, respectively:

a) $2 \text{ Torr} < (\text{pressure in the film-forming chamber}) < 10 \text{ Torr}$

b) $\text{diameter of the substrate to be processed} < (\text{diameter of the shower head}) \times 1.5$ and

c) $2500 \text{ sccm} < (\text{overall flow rate of gases}) < 7000 \text{ sccm}.$

Claim 7. **(Canceled).**

8. **(Previously Presented)** The film-forming apparatus as set forth in claim 1, wherein the pressure in the film-forming chamber, the diameter of the shower head and the overall flow rate of gases upon the formation of the film satisfy the following relations, respectively:

a) $2 \text{ Torr} < (\text{pressure in the film-forming chamber}) < 10 \text{ Torr}$

b) diameter of the substrate to be processed $< (\text{diameter of the shower head}) \times 1.5$ and

c) $2500 \text{ sccm} < (\text{overall flow rate of gases}) < 7000 \text{ sccm}$.

9. **(Previously Presented)** The film-forming apparatus as set forth in claim 1, wherein the clearance for exhaustion satisfies the relation represented by the following equation:

$$0.02 \text{ m}^3/\text{s} < \text{Exhaustion Conductance} < 0.08 \text{ m}^3/\text{s}.$$

10. **(Previously Presented)** The film-forming apparatus as set forth in claim 9, wherein the pressure in the film-forming chamber, the diameter of the shower head and the overall flow rate of gases upon the formation of the film satisfy the following relations, respectively:

a) $2 \text{ Torr} < (\text{pressure in the film-forming chamber}) < 10 \text{ Torr}$

b) diameter of the substrate to be processed $< (\text{diameter of the shower head}) \times 1.5$ and

c) $2500 \text{ sccm} < (\text{overall flow rate of gases}) < 7000 \text{ sccm}$.

11. **(Previously Presented)** The film-forming apparatus as set forth in claim 1, wherein a gas ring is disposed at the periphery of the top face of the film-forming

chamber so that an inert gas, which is not directly involved in the film formation, can uniformly be introduced into the film-forming chamber through the gas ring and along the inner surface of the side wall of the film-forming chamber.

Claim 12. **(Canceled)**.

13. **(Currently Amended)** A film-forming apparatus, which comprises:
a load-lock chamber for stocking wafers conveyed from a wafer cassette in the atmospheric conditions;
a film-forming chamber;
a conveyer chamber positioned between the load-lock chamber and the film-forming chamber;
a gas-mixing chamber for admixing a raw gas and a reactive gas positioned on the upstream side of the film-forming chamber;
a shower head arranged on the top face of the film-forming chamber; and
a stage arranged in the film-forming chamber for placing a substrate to be processed and ~~capable of freely going~~ movable in an up and down manner, in which a gas mixture prepared in the gas-mixing chamber is introduced into the film-forming chamber through the shower head to thus form a film on the substrate via a supply port defined only by an outer peripheral surface of the gas-mixing chamber and an inner surface of the film-forming apparatus,

wherein an exhaust port for discharging the exhaust gas from the film-forming chamber is ~~formed in~~ is defined only by a lowermost surface of a side wall of the film-

forming chamber and a lowermost surface of the film-forming chamber and is at a
~~position~~ located below a level of the stage at an up position and having an opening
extending in a direction that is parallel relative to the direction in which the stage is
raised and lowered, and

wherein the apparatus being characterized in that it is so designed that it can
satisfy the requirements as set forth in claim 1.